

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): Method of treatment by carboxylation, before shaping, of a metal surface in oxidizing conditions in relation to the metal, comprising bringing the said metal surface selected from the group consisting of zinc, iron, aluminum, copper, lead, alloys thereof, galvanized steel, aluminium-coated steel, and copper-coated steel into contact with an organic or hydro-organic aqueous bath comprising at least one organic acid in free form or in the form of salt, wherein:

- the said organic acid is a saturated or unsaturated aliphatic monocarboxylic or dicarboxylic acid,
- the said organic acid is in solution and/or in emulsion in the bath at a concentration greater than 0.1 mole/litre and 1.5 mole/litre or less,
- the pH of the bath is acidic.

2. (previously presented): The method as claimed in Claim 1, wherein said organic acid is a saturated monocarboxylic acid having from 5 to 16 carbon atoms.

3. (previously presented): The method as claimed in Claim 1, wherein said organic acid is an unsaturated monocarboxylic acid having from 10 to 18 carbon atoms.

4. (previously presented): The method as claimed in Claim 1, wherein said organic acid is a saturated dicarboxylic acid having from 4 to 12 carbon atoms.

5. (previously presented): The method as claimed in Claim 2, wherein said organic acid is selected from the group consisting of hexanoic acid, heptanoic acid, octanoic acid, nonanoic acid and decanoic acid.

6. (previously presented): The method as claimed in Claim 3, wherein said unsaturated monocarboxylic organic acid is undecenoic acid, oleic acid or linoleic acid.

7. (previously presented): The method as claimed in Claim 4, wherein said saturated dicarboxylic organic acid is sebacic acid or azelaic acid.

8. (previously presented): The method as claimed in Claim 5, wherein said organic acid is heptanoic acid.

9. (previously presented): The method as claimed in Claim 8, wherein the bath comprises, in addition to heptanoic acid, decanoic acid or undecenoic acid.

10. (previously presented): The method as claimed in Claim 1, wherein the organic or hydro-organic aqueous bath comprises a co-solvent is ethanol, n-propanol, dimethylsulphoxide, N-methyl-2-pyrrolidone, 4-hydroxy-4-methyl-2-pentanone or diacetone alcohol.

11. (previously presented): The method as claimed in Claim 10, wherein the co-solvent is diacetone alcohol.

12. (previously presented): The method as claimed in Claim 1, wherein the said bath further comprises multivalent cations in the +3 oxidation state of a rare earth metal at a concentration greater than or equal to 1×10^{-3} mole/litre and the pH of the bath being higher than 4.

13. (previously presented): The method as claimed in Claim 12, wherein the said multivalent cation is gadolinium.

14. (currently amended): Method of treatment by carboxylation, before shaping, of a metal surface in oxidizing conditions in relation to the metal, comprising bringing the said metal surface selected from the group consisting of zinc, iron, aluminum, copper, lead, alloys thereof, galvanized steel, aluminium-coated steel, and copper-coated steel into contact with an organic or hydro-organic aqueous bath comprising at least one organic acid in free form or in the form of salt, wherein:

- the said organic acid is a saturated or unsaturated aliphatic monocarboxylic or dicarboxylic acid,
- the said organic acid is in solution and/or in emulsion in the bath at a concentration greater than 0.1 mole/litre and 1.5 mole/litre or less,

- the pH of the bath is acidic~~The method as claimed in Claim 1~~, wherein said oxidizing conditions are obtained by addition to the bath of a chemical agent adapted to the metal to be treated.

15. (currently amended): Method of treatment by carboxylation, before shaping, of a metal surface in oxidizing conditions in relation to the metal, comprising bringing the said metal surface selected from the group consisting of zinc, iron, aluminum, copper, lead, alloys thereof, galvanized steel, aluminium-coated steel, and copper-coated steel into contact with an organic or hydro-organic aqueous bath comprising at least one organic acid in free form or in the form of salt, wherein:

- the said organic acid is a saturated or unsaturated aliphatic monocarboxylic or dicarboxylic acid,
- the said organic acid is in solution and/or in emulsion in the bath at a concentration greater than 0.1 mole/litre and 1.5 mole/litre or less,
- the pH of the bath is acidic~~The method as claimed in Claim 1~~, wherein said oxidizing conditions are obtained by causing an electric current to circulate between the said surface previously immersed in the bath and at least one backing electrode which has been likewise immersed.

16. (previously presented): The method as claimed in Claim 1, wherein the concentration of organic acids in the bath, the conditions of use of the said bath and the oxidizing conditions in relation to the metal to be treated are adapted to obtain on the metal

surface a carboxylation coating with a weight per unit area of between 1 and 6 g/m².

17. (previously presented): The method as claimed in Claim 1, wherein, at the end of the treatment of the said surface, a post-treatment is carried out with the aid of a bath containing multivalent cations in the +3 oxidation state of a rare earth metal at a concentration greater than or equal to 1×10^{-3} mole/litre.

18. (previously presented): A method for temporary protection of a metal surface against corrosion, comprising subjecting the metal surface to the carboxylation treatment as claimed in Claim 1.

19. (previously presented): A method of producing a shaped metal sheet having a metal surface selected from the group consisting of zinc, iron, aluminium, copper, lead, alloys, galvanized steel, aluminium-coated steel, and copper-coated steel, comprising subjecting said metal sheet to the carboxylation treatment of as claimed in Claim 1, and oiling and shaping the said treated metal sheet.

20. (previously presented): The method as claimed in Claim 19, wherein said metal sheet is made from steel coated with zinc or with a zinc alloy and is shaped by stamping.

21. (previously presented): The method as claimed in Claim 1, wherein a metal element in the metal surface is dissolved when the surface is brought into contact with the organic or

hydro-organic aqueous bath.

22. (previously presented): The method as claimed in Claim 1, wherein said organic acid is heptanoic acid

23. (previously presented): The method as claimed in Claim 1, wherein said organic or hydro-organic aqueous bath comprises at least two organic acids in free form or in the form of a salt.

24. (previously presented): The method as claimed in Claim 23, wherein said organic or hydro-organic aqueous bath comprises heptanoic acid and decanoic acid.

25. (previously presented): The method as claimed in Claim 23, wherein said organic or hydro-organic aqueous bath comprises heptanoic acid and undecenoic acid.